

compresses the stenosis material also contains the radioactive dose means.

Having indicated above preferred embodiments of the present invention, it will occur to those skilled in the art that modification and alternatives can be practiced within the spirit of the invention. It is accordingly intended to define the scope of the invention only as indicated in the following claims.

What is claimed is:

(1) Apparatus for post-treatment of stenosed region of an artery that has been reduced by angioplasty or other means comprising:

radioactive dose means for emitting radiation; and positioning means operatively connected to said dose means for advancing said dose means and positioning said dose means within the stenosed region of an artery that has been reduced by angioplasty or other means, said positioning means also being operatively connected to said dose means for withdrawing said dose means from the artery, the positioning means further including an angioplasty balloon, said radioactive dose means being connected to said balloon and moveable into contact with the stenosed region by expansion of said balloon.

25

2. The apparatus of claim 1, wherein the radioactive dose means comprises a plurality of radioactive sources distributed around the balloon.

(3) Apparatus for post-treatment of stenosed region of an artery that has been reduced by angioplasty or other means comprising:

radioactive dose means for emitting radiation; and positioning means operatively connected to said dose means for advancing said dose means and positioning said dose means within the stenosed region of an artery that has been reduced by angioplasty or

40

45

50

55

60

65

a add a add

6

other means, said positioning means also being operatively connected to said dose means for withdrawing said dose means from the artery, the positioning means including a retractable sheath which may be removably positioned over said radioactive dose means and the dose means being located in a housing having a cut-out in a sidewall thereof, the dose means being exposed to the stenosed region by moving the sheath from a first position wherein the cut-out is covered by the sheath to a second position wherein the cut-out is not covered by the sheath.

4. The apparatus of claim 3, wherein the housing is a wirewound housing.

15 5. Apparatus for post-treatment of stenosed region of an artery that has been reduced by angioplasty or other means comprising:

radioactive dose means for emitting radiation; and
20 positioning means operatively connected to said dose means for advancing said dose means and positioning said dose means within the stenosed region of an artery that has been reduced by angioplasty or other means, said positioning means also being operatively connected to said dose means for withdrawing said dose means from the artery, the positioning means including a retractable remotely activated cover which may be removably positioned over said radioactive dose means and the dose means being located in a housing having an opening therein, the dose means being exposed to the stenosed region by moving the remotely activated cover from a first position wherein the opening is covered by the remotely activated cover to a second position wherein the opening is not covered by the remotely activated cover.

35 6. Apparatus for post-treatment of a stenosed region of an artery that has been reduced by angioplasty or other procedure comprising:

radioactive dose means for emitting radiation; and
40 positioning means operatively connected to said dose means for advancing said dose means and removably positioning said dose means within the stenosed region of an artery that has been reduced by angioplasty or other procedure, said positioning means also being operatively connected to said dose means for withdrawing said dose means from the artery after said radioactive dose means is exposed to the stenosed region for a period of time sufficient to reduce restenosis of the stenosed region.

55 7. The apparatus of Claim 6, wherein the dose means is in solid form.

60 8. The apparatus of Claim 6, wherein the dose means is in liquid form.

Sub C2

> SUB
A/R

50

40

35

50

55

60

9. The apparatus of Claim 6, wherein the dose means is in gaseous form.

10. Apparatus for post-treatment of a stenosed region of an artery (that has been reduced by angioplasty or other procedure comprising:

a radiation source; and
a catheter adapted to deliver said radiation source within
the stenosed region of an artery that has been reduced by
angioplasty or other procedure, said catheter also being
adapted to withdraw said radiation source from the artery
after said radiation source is exposed to the stenosed region
for a period of time sufficient to reduce restenosis of the
stenosed region.

11. The apparatus of Claim 10, wherein the radiation source is in solid form.

12. The apparatus of Claim 10, wherein the radiation source is in liquid form.

13. The apparatus of Claim 10, wherein the radiation source is in gaseous form.

14. The apparatus of Claim 10, wherein the catheter includes a balloon.

15. The apparatus of Claim 14, wherein the catheter includes a first lumen in fluid communication with the balloon.

16. The apparatus of Claim 15, wherein the catheter includes a second lumen in fluid communication with perfusion holes which allow perfusion of blood in the artery during inflation of the balloon.

17. The apparatus of Claim 10, wherein the radiation source provides a radiation dose to the stenosed region sufficient to retard proliferation of smooth muscle cells at the stenosed region.

45 18. The apparatus of Claim 10, wherein the catheter comprises a balloon catheter capable of performing angioplasty and the post-treatment.

Sub
R4
R1

19. The apparatus of Claim 10, wherein the catheter is
capable of reducing the stenosed region and performing the
post-treatment.



ADD F4